P4877 Flow

G. R. S. IX-5]

Previous references.

File No. 1442-14

1914.

Serial Nos. 1 to 17

(Gen Mis)

Later references.

Dealt by Mysore Govt re preservation of Monuments by H/S

GENERAL AND REVENUE SECRETARIAT.

Serial Nos.

Part B for December 1916.

SUBJECT.

Invention for "Improvements in or connected with rock drilling machines by Mrs W.C. Stephens Engineer of Rock drill & Engineering works Cornwall England.

Sl 17. From the Ch. Engineer Mysore
Letter No 1294 dated 9-12-16.
acknowledges with thanks the receipt of a copy of the above invention

W D 88—GPB—50,000—24-7-16

G. R. S. 11] 1914-15

GENERAL AND REVENUE SECRETARIAT.

(Gen: Mis)

NOTES.

Gen File No. 4421 4/15

FILE HEADING.

Inventin for "Improvements in or connected with rock drilling machines" by Mr Wm Chas: Stephens, Engineer of the Climax Rock Drill & Engineering Works Ltd, Camborea, Cornwall, England.

From

Messrs De Penning & De Penning, Calcutta.

No. 403 Dated 12. 6. 15 Received 15 - 6 - 15

Diary No. 11114	Enclos. 2 & Rs 10/- Spare Copies.	Serial No. /

BRIEF ABSTRACT OF LETTER.

Forward an application for leave to file a specification of the inventin and also a duly stamped Power-of-attorney and remit Rs 10/- as application fees.

NOTES AND ORDERS.

The usual drafts are subd

GB Lee 6/7/15

Issue Secy 6/7

NOTES—First Sheet.

GPB—20,000—8-8-14

G. R. S. 12]

General and Revenue Secretariat.

fm File No. 442 of 1914

296
11-5-7
2083

	Serial No.	
	2	To the Dir: of Mines & Geology. No. C 287 dy. 9. 7. 15
		Forwards for opinion the specifn: recd. with the above
fm	3	To D.C. Tky, Bangalore. No. C 288 dy. 9. 7. 15
		Forwards Rs 10/- recd. with Sl 1 & requests acknt.
	4	From the same. No. 357 dy. 10. 7. 15
		Acknowledgs. receipt of the amount forwarded with the above.
	5	From the Dir: of Mines & Geology. No. 285 dy. 3. 8. 15
		Regret that a copy of the specifn & drawings may be forwarded.
		Draft forwarding is subd
		ek hm 13/8/15 Issd. Mog 17/8.
	6	To the Director of Mines & Geology.
		No. C. 2351 dy. 19-8-15.
		Forwards the a copy of book referred to in Sl. 5 by him
	7	From the same. No. 571 dy. 1. 9-15
		With refce to Sls 2 & 6, reports that the leave to file a specifn of the invention may be granted.
		The usual drafts are subd
		ek hm 30/9/15 The drafts may be approved.
		The Director of Mines & Geology recommends the grant of a patent
		Asst Member)
		Mohammadan 30/9

NOTE—Contn. sheet.

GPB—25,000—30-4-15.

2183
165-3
3603

G. R. S. 12]

General and Revenue Secretariat.

G M File No. 442 of 1914—15.

Serial No.	
	Draft appd by First member 2.10.15 MTS
	Issue Mon 4/10 Date 4/10
8	To, The hon: W. C. Stephens. Engineer, England No: G4936 dy 2-10-14. Orders that the applicant to be informed that he is authorized to file a specification of the invention "Improvements in or Connected with Rock drilling machines".
9	To, Messrs De Penning & De Penning Calcutta With reference to sl 1 forwards the order in sl 8 and request the party may be communicated with the fact.
10 A	From Messrs DePenning & DePenning. No 4098, 22.10.15 forward Rs 30/- + 4 copies of the specification & request the filing of the specification.
	The usual drafts are put up. The Certificate at foot of the G.O. requires signature. Subd 12/11/15 Issue MSR 12/11
10	To, The Dy Comm Treasy. Bangalore No: G 6188 dy 19-11-15 Fds Rs 30/- for filing the Spn of an invention in sl 1.
	—

Rs

L. S.

V. 42

NOTE—Contn. sheet.

GPB—20,000—30-6-15

[R. S. 12]

General and Revenue Secretariat.

G. M. File No. 442 of 1914.

Serial No.	
11	To, The Compiler. No: G 6187 Dt 19-11-15 Notifies the Spn in sl 1
12	To, Messrs De Penning & De Penning No: G. 6188 Dt 19-11-15 Forwards the copy of the notification in sl 11
13	To, The Director of Mines & Geol. The Supdt Govt Museum. The Chief Engineer. No. G. 6189-91 Dt 19.11.15 Rds for record a Spn of an invention in sl 1 & request acknowledgment
14	From the Dy: Comsr. Treasury Dept Bangalore No. 64 Dt 22.11.15 Acknowledges receipt of the amount forwarded with sl. 10.
15	From the Supdt Govt Museum No 91 Dt 22.11.15 Acknowledges receipt of the Specification forwarded with Sl. 13.
16	From the Director of Mines & Geology No. 1139 Dt 30.11.15 Acknowledges receipt of the Specification forwarded with sl. 13. Subd The acknowledgment due from the Chief Engineer will be awaited. Recd the Spn 11/12/15 Yes. Msr 11/12

NOTE—Contn. sheet.

GPB—20,000—30-6-15.

4787-15
572

G. R. S. 12]

General and Revenue Secretariat.

G. R. File No. 442 of 1916.

Serial No.	
	No acknowledgement having been received a draft reminder to the Chief Engineer is submitted for approval.
	TV 28/11/16.
	Issue U/28/11/16
	Issued No. G. 7198 dy 30-11-16
17	From the Chief Engineer No. 12394 dy 5-12-16 Acknowledge receipt of the specification refered to in sl 13 above.
	The Correspondence may now be filed
	Recd 12/12/16 U/s 18/12/16

NOTE—Contn. sheet.

3, Commercial Buildings
Clive Street
Calcutta
12th June 1915.

No 403.

V
Mon
176

DIARY No. 11-114.

94-1915
SECTION Gen: Mis
FILE No. 442-4
CE[illegible]

To
The Secretary to the Government of His Highness
the Maharajah of Mysore
Genl: & Rev: Department, Bangalore.

Sir,

We have the honour to forward under separate cover registered an Application for Patent from William Charles Stephens, Engineer, of The Climax Rock Drill & Engineering Works Limited, Carn Brea, Cornwall, England for "Improvements in or connected with rock drilling machines"

We also forward the fee thereon of Rupees (10) ten by Postal Money Order and shall feel obliged by the orders passed on the application being sent to us in due course.

We have the honour to be
Sir
Your most obedient servants
D'Penning & D'Penning

COUPON... প্রেরক ইচ্ছা করিলে এই স্থানে যে কোন বিষয় গ্রাহককে লিখিতে পারেন।

No. 10

For our advice re Mr. Stephens to file Specn of his inventions forwarded with our letter No. 403 dated 12/6/15

প্রেরক

Copy V

16/6/15

Received the 15 Inst

16/7/15

Fig. 16.

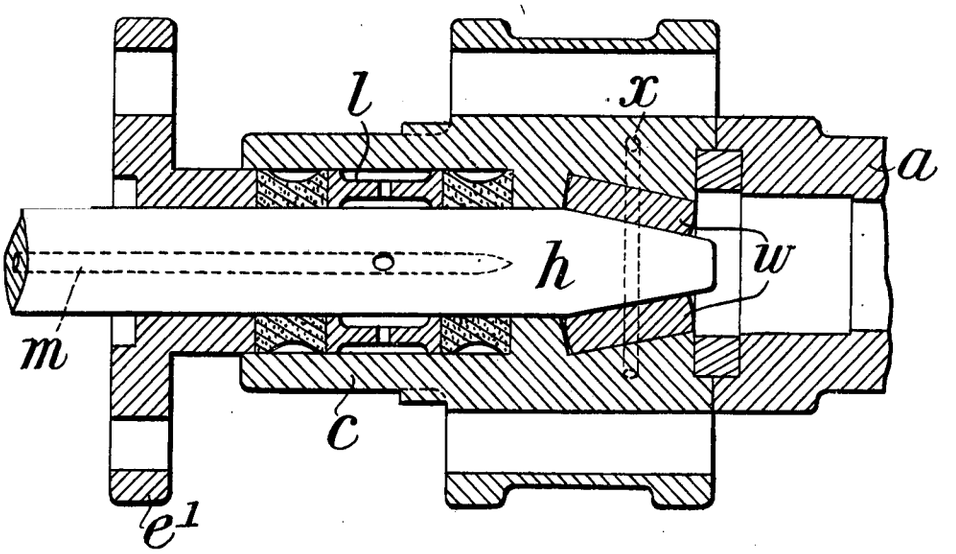
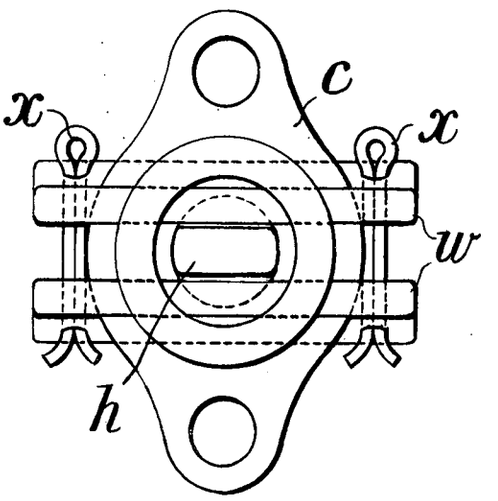


Fig. 17.



2845

9

G. R. S. 26]

SUBJECT.....

.....

...

Diary No. of letter replied to 11114

Section Gen: Mes

File No. 442-14

Serial No. 2

General and Revenue Secretariat

( )

, the 191 .

No. Q.287/one

Date of issue 9th July 15

Signed by Geo Jas R. Rao

To The Director of Mines & Geology

Bangalore

Sir,

I am directed to forward herewith for report under Sec 6(2) of the Mysore Inventions & Designs Regulation No XI of 1894, a specification of an invention for "Improvements in or connected with rock-drilling machines" by Mr. William Charles Stephens of Cornwall.

I have &c,

6/7

for Offg Secretary

Inwd Conl Sect

2 Dft 15

10.7.15

G.R.S. 26]

SUBJECT.....

.....

.....

Diary No. of letter replied to 11114

Section Gen : Mis

File No. 442-14

Serial No. 3

General and Revenue Secretariat

( )

, *the* 191 .

No. Q. 288/Ms 10

Date of issue 9th July 15

To

The Deputy Comm^r, Ivy Deptt,

Bangalore

Signed by Rao Sahib R. Rao

Sir,

I am directed to forward herewith a sum of Rs 10/- received from messrs De Penning & De Penning, Calcutta, being application fees payable under Schedule IV cl (1) a of the ~~the~~ Mysore Inventions & Designs Regulation No. XI of 1894, for leave to file a specification of an invention for "Improvements in or connected with

over.

List of enc

Copied by

Examined by

DIARY No. 296

1915-16

Rs 10/- Ten : nils

Book No. 1059 / 357

No 49

Bangalore District **Treasury** dated 10th July 1915

442-14

4

Received from The Secretary to Government of Mysore General & Revenue Departments Bangalore

Rupees Ten only

Annas _____ and Pies _____ being on account of

Fees for Inventions & Designs Regulation No XI of 1894 & Rules

with docket No G 288 dated 9-7-15

Cum 442-14-3

In charge of Treasury.

Bangalore District Treasury

U/4/8

D.M.G. 12]

GPB—2,000—23-3-15

13

No. 285

BANGALORE, 3.8. August 1915

1165

1915 FROM

Pol. & Mis.

442—14

4

DR. W. F. SMEETH, M.A., D.Sc., A.R.S.M., &c.,
Director, Department of Mines and Geology,
Mysore State.

To

D. M. Narasinga Rao, Esq., B.A., B.L.,
Offg. Secretary to the Government of
His Highness the Maharaja of Mysore,
General Department.

SIR,

With reference to your letter No. G.287/G.M.442-14-2, dated 9th July 1915, forwarding for report copy of Specification of an Invention for "Improvements ~~of~~ in or connected with rock drilling machines" by Mr. William Charles Stephens of Cornwall, I have the honour to request that a copy of the drawings referred to in the specification may kindly be forwarded to me at an early date as the same has not been received in this office.

I have the honour to be,

Sir,

Your most obedient servant,

Director,

N.S.

Department of Mines & Geology.

SUBJECT.....

.....

.....

Diary No. of letter replied to 1165

Section Gen: Mis

File No. 442-14

Serial No. 6

General and Revenue Secretariat

( )

, *the* 191 .

No. G 2351

Date of issue 19 · 8 · 15

Signed by Mr. M. S. R. Row.

To The Director of Mines & Geology.

Sir,

As desired in your letter No 285 of the 3rd August 1915, I am directed to forward herewith copy of the Specification of the invention for "Improvements in or connected with Rock drilling machines" by Mr. William Charles Stephens of Cornwall.

I have etc,

Mssr

17/8

over.

for Chief Secretary,

pl Dept

bus

W.C. Stephens
pg 15

3 Sheets
Sheet 1

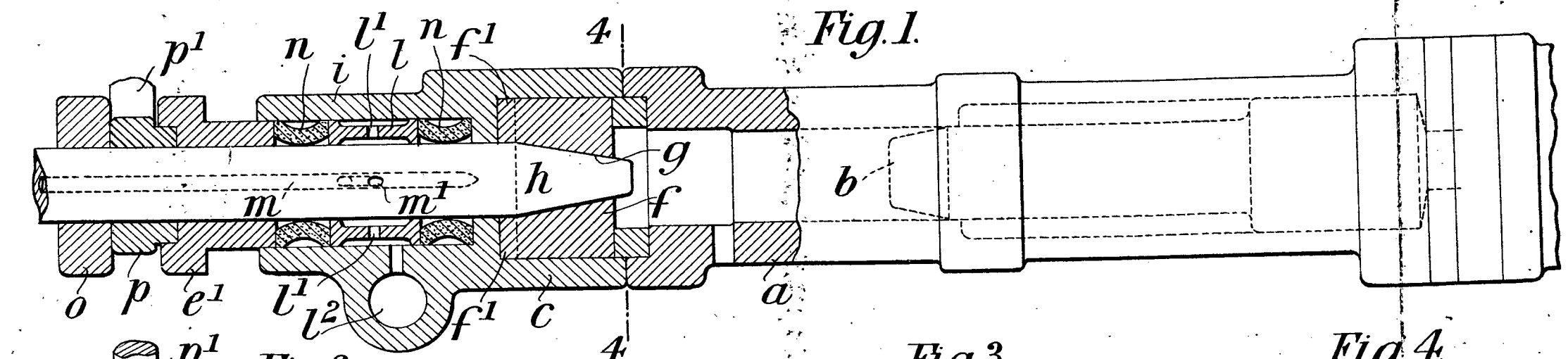


Fig. 1.

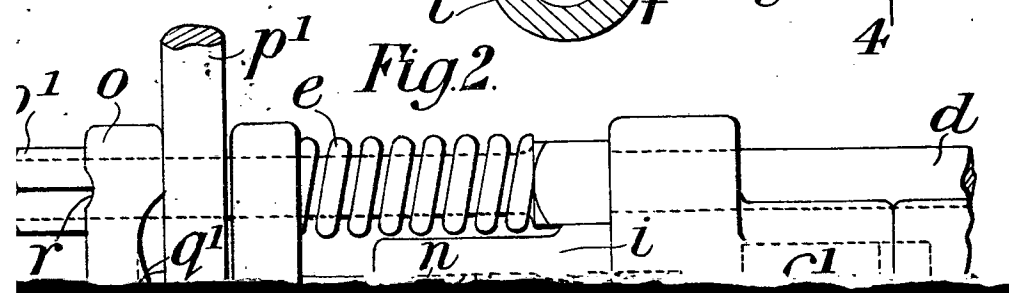


Fig. 2.

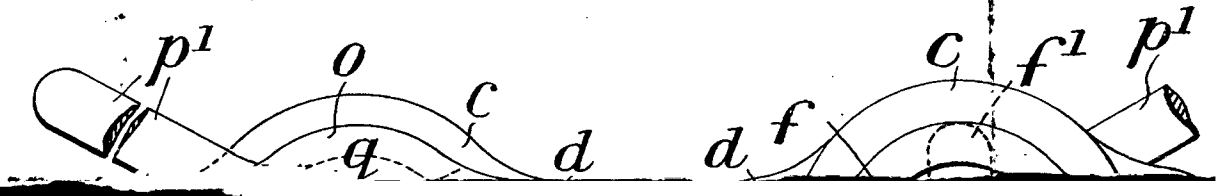


Fig. 3.

Fig. 4.

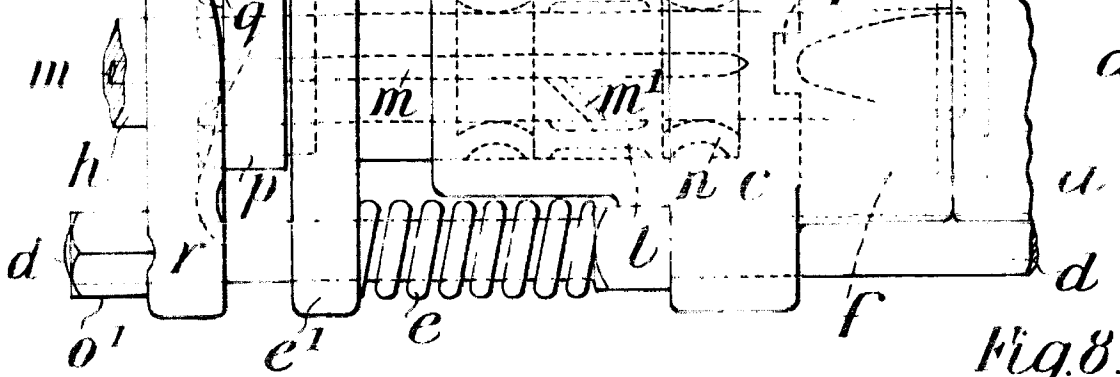


Fig.8.

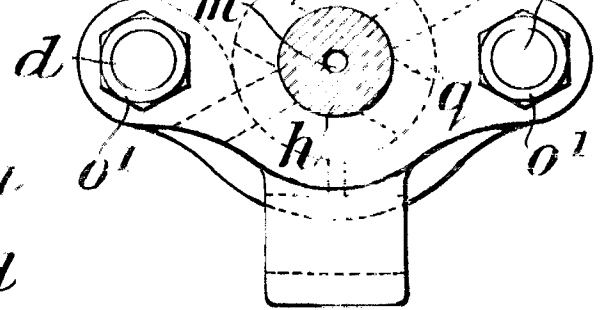


Fig.9.

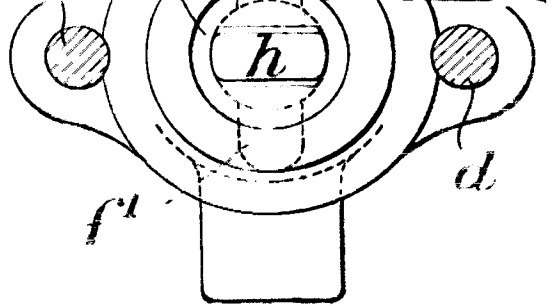
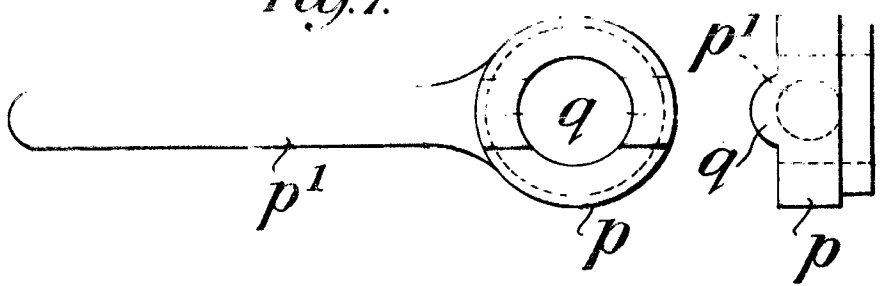
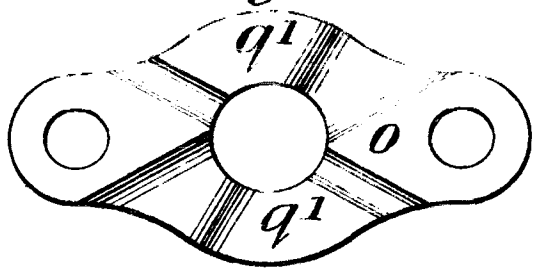


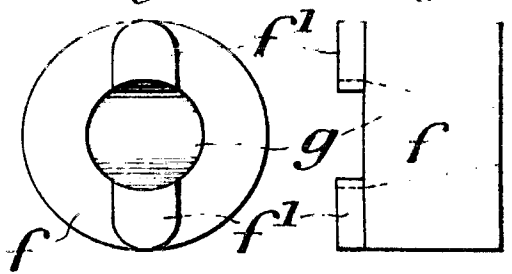
Fig.5.

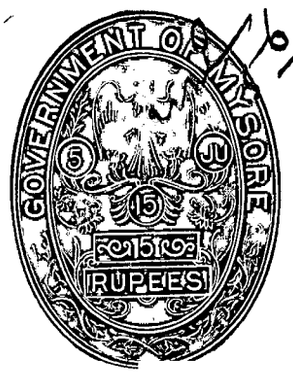
Fig.6.

Fig.7.









In the matter of the Invention and Designs Regulation, 1894 of the Government of Mysore and in the matter of WILLIAM CHARLES STEPHENS, Engineer, of The Climax Rock Drill & Engineering Works, Limited, Carn Brea, Cornwall, England, an Inventor.

I, the above named WILLIAM CHARLES STEPHENS, do hereby retain, constitute and appoint M. L. A. D'Penning & Mr H. A. D'Penning constituting the firm of D'Penning & D'Penning 3, Commercial Buildings, Calcutta, as my Agents and Attorneys to apply for and obtain from the Government of Mysore and keep in force an Exclusive Privilege or Letters Patent for "IMPROVEMENTS IN OR CONNECTED WITH ROCK DRILLING MACHINES" and I authorise them to sign my name to such papers and writings and do such acts regarding the same including the appointment of a substitute or substitutes, as may be necessary or expedient.

Dated this 14th day of April — 1915

Signed, Sealed and Delivered)
at London, England)
in the presence of)

W. C. Stephens

John E. Bousfield
15 South Street Finsbury
Chartered Patent Agent.

A. Abbott.
15 South Street, Finsbury, London
Managing Clerk.

TO THE DEWAN OF MYSORE.

The Application of WILLIAM CHARLES STEPHENS, Engineer, of The Climax Rock Drill & Engineering Works, Limited, Carn Brea, Cornwall, England for leave to file a Specification under Part 1 of the Mysore Inventions and Designs Regulation, 1894.

1. The Applicant is in possession of an Invention for "IMPROVEMENTS IN OR CONNECTED WITH ROCK DRILLING MACHINES" he is the inventor thereof; and to the best of his information and belief, the Invention is new within the meaning of part 1 of the Mysore Inventions and Designs Regulation 1894, and no circumstance exists which, if the applicant is authorised to file a Specification, and files it in accordance with that part, will disentitle him to an exclusive privilege thereunder in respect of the Invention.

2. The Applicant has applied for a Patent (with Provisional Specifications) in the United Kingdom in respect of this Invention No. 16034 dated the 4th July 1914 (see Illustrated Official Journal No. 1329 page 978) which Specification was accepted on the 6th November 1914 No. 20785 dated the 9th October 1914 (see Illustrated Official Journal No. 1343, page 1387) which Specification was accepted on the 4th November 1914 and No. 21843 dated the 31st October 1914 (see Illustrated Official Journal No. 1346, page 1472 (which Specification was accepted on the 19th November 1914 and a Complete Specification embodying the said three cognate applications was filed on the 4th January 1915.

3. The following is a description of the Invention:-

My invention relates to rock drilling machines of the hammer type.

In machines of this type as now generally constructed, it is a common practice to make the drill shanks, tools or borers of round steel, and to form long wings, squares, flats or the like thereon to allow of the operation of the twisting device; such an arrangement, however, is expensive. Futhermore, when the drill shanks are made hollow for delivering water to the bottom of the bore hole, a lateral hole for admitting the water has to be formed through the drill shank at some distance from the end of the latter, which hole is a source of weakness when the drill is at work, and if, as sometimes occurs, the drill shank breaks, a considerable length of steel is wasted. The object of my invention is to simplify the construction of the drill shank and also, when water circulation is provided for, to arrange that in case of the fracture of the drill shank, only a short length of steel shall be wasted.

In carrying out my invention, the steel of which the drill shank is constructed is flattened at the end only so as to give it the form of a chisel or punch bar with a blunt edge, or instead of making it in this manner it can be formed with one flat or with three or more flats, as desired, the essential condition, however, being the formation of only the extreme end of the drill shank with one, two, three or more sides which will fit into a correspondingly shaped socket, chuck or stop in the front cover of the drill and project into the drill cylinder so that it will be struck by the hammer, the said front cover being fixed so as to be rotated or oscillated with the drill and thereby correspondingly rotate or drive the drill shank or

tool without employing a separate rotating device attached to the tool itself.

When the drill shank or borer is provided with a central hole for the flow of water, the flattening of the rear end of the said borer closes the hole and seals the end to prevent the water leaking back into the machine. To introduce water into the central hole in the borer a small drilled radial hole is provided as heretofore, but this radial hole is near to the flattened end of the borer so that in case of breakage at this hole, the amount of steel which is broken off will not be material, and involve much waste.

In order to introduce water into the borer I combine with the front cover before referred to a sleeve through which the borer has to be passed to introduce the flattened end into the chuck, the said sleeve having an opening formed in it at one side to enable it to be attached to the water supply; to prevent the water from escaping around the borer I provide packing rings which fit the borer and means for adjusting the compression of such packing rings.

My invention will be readily understood by reference to the accompanying drawings, in which:-

Figure 1 is a side view partly in section of a front portion of a drill having my improvements applied to it.

Figure 2 is a plan view of the chuck end of the drill.

Figure 3 is a view looking in the direction of the arrow, figure 2, and

Figure 4 is a section on the line 4-4, figure 1.

Figures 5 and 6 are respectively a side view and an end view of the chuck detached.

Figures 7 and 8 are respectively a side view and an end view of a cam lever, and

Figure 9 is a face view of a cam plate for compressing the packing rings in the packing sleeve.

Figure 10 is a sectional side view illustrating a modification in the construction of the chuck, and

Figure 11 is a plan thereof.

Figures 12 and 13 are sections on the lines 12-12 and 13-13 of figure 10, respectively.

Figures 14 and 15 are elevations at right angles of a detail.

Figures 16 and 17 are respectively a longitudinal section and an end view illustrating a further modification.

a indicates the cylinder of the drill and b the piston or hammer reciprocating therein. c is the front cover of the cylinder and d, d are longitudinal bolts by means of which the said cover is held in position on the cylinder, springs e, e being arranged upon extensions of the said bolts between the heads and a plate e^1 to minimise the vibration due to the concussion of the hammer.

Referring to the arrangement illustrated in figures 1 to 9, f is the chuck which is fitted into a recess in the cover c, the said chuck (which is shown detached in figures 5 and 6) being constructed with lugs f^1, f^1 which engage in corresponding recesses in the cover c. This chuck is formed with an aperture g designed to receive the correspondingly shaped end of the borer h. As shown in figures 1 and 2 the end of the borer h is provided with flat surfaces similar to a chisel or punch bar, the extreme end of the said borer projecting through the chuck f so that it will be struck by the hammer b as the latter reciprocates.

In the drawings I have represented the borer as being formed with only two flat surfaces. It will be obvious, however, that it may be formed with three or more such surfaces, the aperture g in the chuck being correspondingly shaped.

It will be understood that with this arrangement the cost of preparing borers to fit a drill can be cheaply and expeditiously effected.

When provision is to be made for supplying water through the borer h the front cover c has formed integral with it a sleeve i forming a stuffing box, the gland of which is partly formed of the plate e¹ before referred to. Within this stuffing box is a ring l bored and turned so that spaces are formed between the walls of the said stuffing box and the said ring and between the ring and the borer h, a series of holes l¹ being made in the said ring to allow water which is introduced, say, through the socket l², to pass into the central hole m of the borer through the lateral hole m¹.

In connection with this ring l are packing rings n, n which are preferably made concave on the outer side and convex on the innerside, as clearly shown in figure 1, so that when the gland e¹ is tightened up the slight compression produced thereby will cause the said rings to bulge inwardly, so as to form a tight joint around the borer h. When the pressure on the said gland is slackened, the pressure of the rings n upon the borer h is relieved so that the latter can be readily removed and replaced.

In order to facilitate compressing the packing rings n around the borer h when the latter is in a position for operation, and for relieving the pressure of the said rings upon the borer when the latter is to be removed, I arrange in front of the gland a plate o, figures 2 and 9, forming an abutment through which the said borer is adapted to pass and fit somewhat closely, the said abutment engaging the extensions of the bolts d and being held against movement in one direction thereon by means of nuts o¹.

Between the gland e¹ and the abutment o is arranged a cam ring p through which the borer h passes, the said ring being provided with a projecting lever handle p¹, figures 7 and 8, for rotating it, and having upon one face inclined or cam surfaces q, q which correspond with cam surfaces q¹, q¹ upon the abutment o, or upon the gland e¹, in such a manner, that when the said cam ring is turned in one direction, the gland will be forced by the said ring inwards against the packing rings n, n, thereby compressing the latter. The movement of the cam ring p in the opposite direction will permit the gland e¹ to move out again under the pressure of the springs e or of springs otherwise arranged. In practice the cam surfaces q¹, q¹ are preferably so formed that the ring p locks itself in position when the gland is forced fully home.

Instead of, or in addition to, the cam ring p before described, I may construct the nuts o¹ which secure the abutment o, or the gland e¹, upon the bolts d, d with ribs r, r, which engage with corresponding grooves on the face of the said abutment, this construction allowing of the ready adjustment of the nuts whilst at the same time preventing them from working loose under vibration.

In order to compensate for the wear due to the continual vibration to which the borer h is subjected so that it will be caused to project to a uniform extent through the chuck or stop f and also to provide for positioning the said borer in case one side of the said chuck or stop wears more than the other, I sometimes construct the chuck with movable jaws or blocks, according to the number of flats formed upon the borer, the said jaws or blocks being adjustable in a radial direction with relation to the axis of the

borer h, the faces of the blocks with which the flats of the borer come in contact being inclined to correspond with the inclination of the said flats. This modification is illustrated in figures 10 to 15, s, s being the jaws or blocks which form the socket into which the end of the borer h fits. These blocks s are located in a transverse groove or recess formed in the end of the cover c adjacent to the cylinder a and are arranged with their inclined faces opposite to one another so that the tapered end of the borer h can be introduced between them. On opposite sides of the cover c are arranged plates t, t through which screw-threaded studs or shanks s^1, s^1 on the said jaws or blocks s project, the blocks being securely fixed to the said plates, for instance, by nuts t^1, t^1 so as to be adjustable therewith. These plates are carried by bolts u, u passed through the cover c from side to side so that they are common to both plates t, whereby the tightening of nuts u^1, u^1 upon the said bolts will adjust both plates t and consequently the jaws s, s simultaneously. The adjusting nuts u^1, u^1 are preferably formed on their under surfaces with ribs which co-operate with notches on the adjacent plate t (as hereinbefore described with reference to the nuts c^1 in the bolts d) so that they can be readily adjusted, and springs v, v are arranged between the said plates t and the cover c, the action of which springs is to press the said plates against the nuts u^1, u^1.

Instead of arranging springs in connection with the plates t as above described, the said plates may be rigidly fixed to the cover c, and the position of the jaws or blocks s with relation to the said plates be adjusted by inserting washers of suitable thickness between the said jaws or blocks and the plates t; or, as a further modifi-

cation, set-screws can be passed through the plates t and adapted to press upon the blocks or jaws s; in the latter case, however, the said jaws or blocks s would be constructed without screwed studs or shanks upon them as previously described, and lock nuts would be provided upon the set-screws. Or, again, taper screws or wedges may be arranged between the plates t and the jaws s.

As a further modification of the arrangement for compensating for wear of the flat surfaces due to the continual vibration, I form through the cover c two parallel slots which intersect the central recess therein and having their inner or adjacent surfaces in planes corresponding with the planes of the flats or inclined surfaces on the borer h, and into these slots I insert strips w, w of steel or other suitable metal which will constitute the flats of the chuck, as clearly shown in figures 16 and 17. These strips are connected at their outer ends by keys x, x or by other suitable means so as to prevent them from falling out of position.

In some cases the said strips may be made of sufficient length to allow of their being shifted from time to time to bring fresh surfaces into position for contact with the head of the borer as may be required.

Having now fully described and ascertained my said invention and the manner in which it is to be performed, I declare that what I claim is:-

A rock drilling machine of the type referred to, the front cover of which has in it a chuck having plain inclined surfaces with which corresponding inclined surfaces on the borer co-operate so that the rotation of the drill will also rotate the borer, substantially as

pressing the said rings around the borer when introduced, substantially as described.

In a rock drilling machine of the type referred to, the combination with the front cover, provided with a chuck for the borers and with a sleeve containing packing, of a cam device for compressing the packing around the borer or relieving the pressure, substantially as described.

In a rock drilling machine of the type referred to, the combination of a front cover, a chuck therein having plain inclined surfaces with which corresponding inclined surfaces on the borer co-operate, a sleeve on the said front cover into which water is introduced and from which it flows into the borer, a gland for compressing the packing rings within the sleeve, threaded bolts passing through the gland, threaded nuts on the bolts for operating the gland to compress the packing rings, projections or ribs on the said nuts, notches with which the ribs on the nuts co-operate and springs on the bolts for pressing the said lugs and notches into engagement, substantially as, and for the purpose, described.

In a rock drilling machine of the type referred to, and provided with a front cover having a chuck therein for the reception of the borer and with a sleeve on the said front cover into which water is introduced and from which it flows into the borer, a metal ring of a diameter externally to fit the sleeve and internally to receive the borer, recesses on the inner and outer faces of the said sleeve and a series of holes in the ring through which water can pass, substantially as described.

10. In a rock drilling machine of the type referred to, the combination of a front cover, a socket or stop therein having plain inclined surfaces, a sleeve on the said front cover surrounding the borer and into which water is introduced and from which it flows through the lateral hole in the borer into the central passage thereof, a metal ring fitting within the sleeve and recessed on its inner and outer faces and provided with a series of holes and packing rings also fitting within the sleeve having concavo-convex surfaces, substantially as described.

11. In a rock drilling machine of the type referred to, the combination with the front cover of adjustable blocks provided with plain inclined surfaces, the said blocks constituting a chuck for the reception of the borer, substantially as, and for the purpose, described.

4. The Applicant, therefore, applies for leave to file a Specification of the Invention pursuant to Part 1 of the Mysore Inventions and Designs Regulation 1894.

Wm C. Stephens

I, the applicant above named, do declare that the facts stated in this application are true to my knowledge except as to matters stated on information and belief and as to those matters I believe them to be true.

Wm C. Stephens

Dated this 14th day of April 1915.

GPB—2,000—23-3-15

98

No. 511

BANGALORE, 18th Sept 1915.

5/9 1st Encl. ~~one~~ five

FROM

DR. W. F. SMEETH, M.A., D.SC., A.R.S.M., &C.,
Director, Department of Mines and Geology,
Mysore State.

DIARY No. 2183
1915-1916
SECTION Gen. Mis
FILE No. 442-14
SERIAL No. 7

To

D.M. Narasinga Rao, Esquire, B.A., B.L.,
Secretary to the Government of His Highness
the Maharaja of Mysore, General Department.

SIR,

In reply to your letters No.G.287/G.M. 442-14-2 and No. G.2351/G.M.442-14-6, dated 9th July and 19th August 1915, respectively, forwarding for report a copy of Specificatio- an invention for "Improvements in or connected with Rock drilling machines" by Mr. William Charles Stephens of Corn I have the honour to state that in my opinion the leave applied for may be granted. The specification is ~~already~~ c drawn up and the improvements are to the best of my belief novel and practical.

2. The papers received with your letters above referred to are herewith returned.

I have the honour to be,

Sir,

Your most obedient servant,

W. F. Smeeth

Director,
Department of Mines & Geology.

N.R.

Reg no 1587-14

97

TO THE DEWAN OF MYSORE.

The Application of WILLIAM CHARLES STEPHENS, Engineer, of The Climax Rock Drill & Engineering Works, Limited, Carn Brea, Cornwall, England for leave to file a Specification under Part 1 of the Mysore Inventions and Designs Regulation, 1894.

1. The Applicant is in possession of an Invention for "IMPROVEMENTS IN OR CONNECTED WITH ROCK DRILLING MACHINES" he is the inventor thereof; and to the best of his information and belief, the Invention is new within the meaning of part 1 of the Mysore Inventions and Designs Regulation 1894, and no circumstance exists which, if the applicant is authorised to file a Specification, and files it in accordance with that part, will disentitle him to an exclusive privilege thereunder in respect of the Invention.

2. The Applicant has applied for a Patent (with Provisional Specifications) in the United Kingdom in respect of this Invention No. 16034 dated the 4th July 1914 (see Illustrated Official Journal No. 1329 page 978) which Specification was accepted on the 6th November 1914 No. 20785 dated the 9th October 1914 (see Illustrated Official Journal No. 1343, page 1387) which Specification was accepted on the 4th November 1914 and No. 21843 dated the 31st October 1914 (see Illustrated Official Journal No. 1346, page 1472) which Specification was accepted on the 19th November 1914 and a Complete Specification embodying the said three cognate applications was filed on the 4th January 1915.

3. The following is a description of the Invention:-

My invention relates to rock drilling machines of the hammer type.

In machines of this type as now generally constructed, it is a common practice to make the drill shanks, tools, or borers of round steel, and to form long wings, squares, flats or the like thereon to allow of the operation of the twisting device; such an arrangement, however, is expensive. Futhermore, when the drill shanks are made hollow for delivering water to the bottom of the bore hole, a lateral hole for admitting the water has to be formed through the drill shank at some distance from the end of the latter, which hole is a source of weakness when the drill is at work, and if, as sometimes occurs, the drill shank breaks, a considerable length of steel is wasted. The object of my invention is to simplify the construction of the drill shank and also, when water circulation is provided for, to arrange that in case of the fracture of the drill shank, only a short length of steel shall be wasted.

In carrying out my invention, the steel of which the drill shank is constructed is flattened at the end only so as to give it the form of a chisel or punch bar with a blunt edge, or instead of making it in this manner it can be formed with one flat or with three or more flats, as desired, the essential condition, however, being the formation of only the extreme end of the drill shank with one, two, three or more sides which will fit into a correspondingly shaped socket, chuck or stop in the front cover of the drill and project into the drill cylinder so that it will be struck by the hammer, the said front cover being fixed so as to be rotated or oscillated with the drill and thereby correspondingly rotate or drive the drill shank or

tool without employing a separate rotating device attached to the tool itself.

When the drill shank or borer is provided with a central hole for the flow of water, the flattening of the rear end of the said borer closes the hole and seals the end to prevent the water leaking back into the machine. To introduce water into the central hole in the borer a small drilled radial hole is provided as heretofore, but this radial hole is near to the flattened end of the borer so that in case of breakage at this hole, the amount of steel which is broken off will not be material, and involve much waste.

In order to introduce water into the borer I combine with the front cover before referred to a sleeve through which the borer has to be passed to introduce the flattened end into the chuck, the said sleeve having an opening formed in it at one side to enable it to be attached to the water supply; to prevent the water from escaping around the borer I provide packing rings which fit the borer and means for adjusting the compression of such packing rings.

My invention will be readily understood by reference to the accompanying drawings, in which:-

Figure 1 is a side view partly in section of a front portion of a drill having my improvements applied to it.

Figure 2 is a plan view of the chuck end of the drill.

Figure 3 is a view looking in the direction of the arrow, figure 2, and

Figure 4 is a section on the line 4-4, figure 1.

Figures 5 and 6 are respectively a side view and an end view of the chuck detached.

Figures 7 and 8 are respectively a side view and an end view of a cam lever, and

Figure 9 is a face view of a cam plate for compressing the packing rings in the packing sleeve.

Figure 10 is a sectional side view illustrating a modification in the construction of the chuck, and

Figure 11 is a plan thereof.

Figures 12 and 13 are sections on the lines 12-12 and 13-13 of figure 10, respectively.

Figures 14 and 15 are elevations at right angles of a detail.

Figures 16 and 17 are respectively a longitudinal section and an end view illustrating a further modification.

a indicates the cylinder of the drill and b the piston or hammer reciprocating therein. c is the front cover of the cylinder and d,d are longitudinal bolts by means of which the said cover is held in position on the cylinder, springs e,e being arranged upon extensions of the said bolts between the heads and a plate e^1 to minimise the vibration due to the concussion of the hammer.

Referring to the arrangement illustrated in figures 1 to 9, f is the chuck which is fitted into a recess in the cover c, the said chuck (which is shown detached in figures 5 and 6) being constructed with lugs f^1,f^1 which engage in corresponding recesses in the cover c. This chuck is formed with an aperture g designed to receive the correspondingly shaped end of the borer h. As shown in figures 1 and 2 the end of the borer h is provided with flat surfaces similar to a chisel or punch bar, the extreme end of the said borer projecting through the chuck f so that it will be struck by the hammer b as the latter reciprocates.

In the drawings I have represented the borer as being formed with only two flat surfaces. It will be obvious, however, that it may be formed with three or more such surfaces, the aperture g in the chuck being correspondingly shaped.

It will be understood that with this arrangement the cost of preparing borers to fit a drill can be cheaply and expeditiously effected

When provision is to be made for supplying water through the borer h the front cover c has formed integral with it a sleeve i forming a stuffing box, the gland of which is partly formed of the plate e^1 before referred to. Within this stuffing box is a ring l bored and turned so that spaces are formed between the walls of the said stuffing box and the said ring and between the ring and the borer h, a series of holes l^1 being made in the said ring to allow water which is introduced, say, through the socket l^2, to pass into the central hole m of the borer through the lateral hole m^1.

In connection with this ring l are packing rings n, n which are preferably made concave on the outer side and convex on the innerside, as clearly shown in figure 1, so that when the gland e^1 is tightened up the slight compression produced thereby will cause the said rings to bulge inwardly, so as to form a tight joint around the borer h. When the pressure on the said gland is slackened, the pressure of the rings n upon the borer h is relieved so that the latter can be readily removed and replaced.

In order to facilitate compressing the packing rings n around the borer h when the latter is in a position for operation, and for relieving the pressure of the said rings upon the borer when the latter is to be removed, I arrange in front of the gland a plate o, figures 2 and 9, forming an abutment through which the said borer is adapted to pass and fit somewhat closely, the said abutment engaging the extensions of the bolts d and being held against movement in one direction thereon by means of nuts o^1.

Between the gland e^1 and the abutment o is arranged a cam ring p through which the borer h passes, the said ring being provided with a projecting lever handle p^1, figures 7 and 8, for rotating it, and having upon one face inclined or cam surfaces q, q which correspond with cam surfaces q^1, q^1 upon the abutment o, or upon the gland e^1, in such a manner, that when the said cam ring is turned in one direction, the gland will be forced by the said ring inwards against the packing rings n, n, thereby compressing the latter. The movement of the cam ring p in the opposite direction will permit the gland e^1 to move out again under the pressure of the springs e or of springs otherwise arranged. In practice the cam surfaces q^1, q^1 are preferably so formed that the ring p locks itself in position when the gland is forced fully home.

Instead of, or in addition to, the cam ring p before described, I may construct the nuts o^1 which secure the abutment o, or the gland e^1, upon the bolts d, d with ribs r, r which engage with corresponding grooves on the face of the said abutment, this construction allowing of the ready adjustment of the nuts whilst at the same time preventing them from working loose under vibration.

In order to compensate for the wear due to the continual vibration to which the borer h is subjected so that it will be caused to project to a uniform extent through the chuck or stop f and also to provide for positioning the said borer in case one side of the said chuck or stop wears more than the other, I sometimes construct the chuck with movable jaws or blocks, according to the number of flats formed upon the borer, the said jaws or blocks being adjustable in a radial direction with relation to the axis of the

borer h, the faces of the blocks with which the flats of the borer come in contact being inclined to correspond with the inclination of the said flats. This modification is illustrated in figures 10 to 15, s, s being the jaws or blocks which form the socket into which the end of the borer h fits. These blocks s are located in a transverse groove or recess formed in the end of the cover c adjacent to the cylinder a and are arranged with their inclined faces opposite to one another so that the tapered end of the borer h can be introduced between them. On opposite sides of the cover c are arranged plates t, t through which screw-threaded studs or shanks s^1, s^1 on the said jaws or blocks s project, the blocks being securely fixed to the said plates, for instance, by nuts t^1, t^1 so as to be adjustable therewith. These plates are carried by bolts u, u passed through the cover c from side to side so that they are common to both plates t, whereby the tightening of nuts u^1, u^1 upon the said bolts will adjust both plates t and consequently the jaws s, s simultaneously. The adjusting nuts u^1, u^1 are preferably formed on their under surfaces with ribs which co-operate with notches on the adjacent plate t (as hereinbefore described with reference to the nuts c^1 in the bolts d) so that they can be readily adjusted, and springs v, v are arranged between the said plates t and the cover c, the action of which springs is to press the said plates against the nuts u^1, u^1.

Instead of arranging springs in connection with the plates t as above described, the said plates may be rigidly fixed to the cover c, and the position of the jaws or blocks s with relation to the said plates be adjusted by inserting washers of suitable thickness between the said jaws or blocks and the plates t; or, as a further modifi-

cation, set-screws can be passed through the plates t and adapted to press upon the blocks or jaws s; in the latter case, however, the said jaws or blocks s would be constructed without screwed studs or shanks upon them as previously described, and lock nuts would be provided upon the set-screws. Or, again, taper screws or wedges may be arranged between the plates t and the jaws s.

As a further modification of the arrangement for compensating for wear of the flat surfaces due to the continual vibration, I form through the cover c two parallel slots which intersect the central recess therein and having their inner or adjacent surfaces in planes corresponding with the planes of the flats or inclined surfaces on the borer h, and into these slots I insert strips w, w of steel or other suitable metal which will constitute the flats of the chuck, as clearly shown in figures 16 and 17. These strips are connected at their outer ends by keys x, x or by other suitable means so as to prevent them from falling out of position.

In some cases the said strips may be made of sufficient length to allow of their being shifted from time to time to bring fresh surfaces into position for contact with the head of the borer as may be required.

Having now fully described and ascertained my said invention and the manner in which it is to be performed, I declare that what I claim is:-

A rock drilling machine of the type referred to, the front cover of which has in it a chuck having plain inclined surfaces with which corresponding inclined surfaces on the borer co-operate so that the rotation of the drill will also rotate the borer, substantially as

described.

2. In a rock drilling machine of the type referred to, the combination with the front cover of a chuck provided with inclined surfaces, the said inclined surfaces being movable with relation to the chuck, substantially as described.

3. In a rock drilling machine of the type referred to provided with a chuck having inclined surfaces with which corresponding surfaces on the borer are designed to engage, adjustable blocks fitted into the chuck and having the said inclined surfaces formed upon them, substantially as, and for the purpose, described.

4. In a rock drilling machine of the type referred to, provided with a chuck having inclined surfaces, the combination with the aperture through which the drill is inserted, of slots extending across the cover and strips inserted into the said slots and the surfaces of which form the flats of the chuck, substantially as described.

5. In a rock drilling machine of the type referred to, the combination of a front cover, a chuck therein having inclined surfaces, a sleeve on the said front cover and packing in the said sleeve for making a joint around the borer when the latter is passed through the sleeve, substantially as, and for the purpose, described.

6. In a rock drilling machine of the type referred to, the combination of a front cover, a chuck therein having plain inclined surfaces for engagement with the borer, a sleeve on the said front cover surrounding the borer and into which water is introduced and from which it flows into the borer, packing rings within the said sleeve of concavo-convex section, and a gland for com-

pressing the said rings around the borer when introduced, substantially as described.

7. In a rock drilling machine of the type referred to, the combination with the front cover, provided with a chuck for the borers and with a sleeve containing packing, of a cam device for compressing the packing around the borer or relieving the pressure, substantially as described.

8. In a rock drilling machine of the type referred to, the combination of a front cover, a chuck therein having plain inclined surfaces with which corresponding inclined surfaces on the borer co-operate, a sleeve on the said front cover into which water is introduced and from which it flows into the borer, a gland for compressing the packing rings within the sleeve, threaded bolts passing through the gland, threaded nuts on the bolts for operating the gland to compress the packing rings, projections or ribs on the said nuts, notches with which the ribs on the nuts co-operate and springs on the bolts for pressing the said lugs and notches into engagement, substantially as, and for the purpose, described.

9. In a rock drilling machine of the type referred to, and provided with a front cover having a chuck therein for the reception of the borer and with a sleeve on the said front cover into which water is introduced and from which it flows into the borer, a metal ring of a diameter externally to fit the sleeve and internally to receive the borer, recesses on the inner and outer faces of the said sleeve and a series of holes in the ring through which water can pass, substantially as described.

10. In a rock drilling machine of the type referred to, the combination of a front cover, a socket or stop therein having plain inclined surfaces, a sleeve on the said front cover surrounding the borer and into which water is introduced and from which it flows through the lateral hole in the borer into the central passage thereof, a metal ring fitting within the sleeve and recessed on its inner and outer faces and provided with a series of holes and packing rings also fitting within the sleeve having concavo-convex surfaces, substantially as described.

11. In a rock drilling machine of the type referred to, the combination with the front cover of adjustable blocks provided with plain inclined surfaces, the said blocks constituting a chuck for the reception of the borer, substantially as, and for the purpose, described.

4. The Applicant, therefore, applies for leave to file a Specification of the Invention pursuant to Part 1 of the Mysore Inventions and Designs Regulation 1894.

Wm. C. Stephens

I, the Applicant above named, do declare that the facts stated in this application are true to my knowledge except as to matters on information and belief and as to those matters I believe them to be true.

Wm. C. Stephens

Dated this 14th day of April — 1915.

2266

GOVERNMENT OF MYSORE

General Department.

C. 4936
C. M. 1612-14-8

Register No. 15 of 1904-15

Bangalore, the ..... *190* .

WHEREAS an application, dated the 14th April 1915 and received on the 15th June 1915, has been submitted under Section 5 of the Mysore Inventions and Designs Regulation, 1894, by Mr William Charles Stephens, Engineer of The Climax Rock Drill & Engineering Works Limited, Carn Brea, Cornwall, England,

(hereinafter referred to as "the applicant") for leave to file a specification of an invention for "Improvements in or connected with Rock Drilling Machines,"

And whereas the applicant has duly complied with all the requirements of Section 5 of the said Regulation;

The Government of Mysore are pleased, under Section 6 of the said Regulation, to authorize the applicant to file a specification of the said invention in accordance with the provisions of the said Regulation.

ORDERED, that the applicant be, and he is hereby, informed accordingly.

By Order of the Government of Mysore,

Dtd) Mm 3019.

for *Secretary to the Govt. of Mysore,*
Gen. and Rev. Depts.

24/10/15

Certified that the fees prescribed in the fourth schedule to the Mysore Inventions and Designs Regulation, 1894, in respect of the application for leave to file the said specification and of the filing thereof have been paid by the applicant, and that the specification hereinbefore described has been duly filed in accordance with the provisions of Section 8 of the said Regulation on this the Twenty sixth day of October 1915.

Dtd. Sig. R

Secretary to the Govt. of Mysore,
Gen. and Rev. Depts.

(Section 8 of the Inventions and Designs Regulation, 1874.)

8. (1) If within six months from the date of an order under Section 6, Sub-Section (1), or within such further time, not exceeding three months, as the Government of Mysore, in its discretion, may, on cause shown to its satisfaction and on payment of the fee prescribed in that behalf in the fourth schedule, see fit to allow, the applicant causes a specification of his invention to be filed in respect of which this Part required, and the fee prescribed in the fourth schedule in respect of the filing of the specification to be paid, the applicant shall, subject to the other provisions of this Part, be entitled to the exclusive privilege of making, selling and using the invention in the Territories of Mysore, and of authorizing others so to do, for the term of fourteen years from the date of the filing of the specification.

(2) But an exclusive privilege in respect of an invention of any manufacture shall, notwithstanding anything in Sub-Section (1), cease if the inventor fails to pay, within the time limited in that behalf by the fourth schedule, any fee prescribed in that schedule in respect of the continuance of the privilege.

(3) If, nevertheless, in any case, by accident, mistake, or inadvertence, an inventor fails to pay any such fee within the time so limited, he may apply to the Government of Mysore for an enlargement of the time for making the payment.

(4) Thereupon the Government of Mysore may enlarge the time accordingly, on payment of the fee prescribed in that behalf in the fourth schedule, and subject to the following conditions, namely :—

(*a*) the time for making a payment shall not in any case be enlarged for more than three months ; and

(*b*) if any suit is instituted in respect of an infringement of the exclusive privilege committed after a failure to make a payment within the time limited for the making thereof and before the enlargement of that time, the Court disposing of the suit may, if it thinks fit, refuse to award or give any damages in respect of the infringement.

GTB—500—7-4-09.

G.R.S. 26]

SUBJECT.....

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Diary No. of letter replied to 2183

General and Revenue Secretariat

( )

, the *191* .

Date of issue 13-10-15

Signed by Mr. B. S. Rao

Section Gen : Mis

File No. 442—14

Serial No. 9

No. C. 4937/one

To

Messrs De Penning & De Penning,

3, Commercial Buildings, Clive Street,

Calcutta.

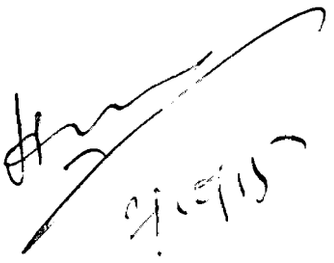
Gentlemen,

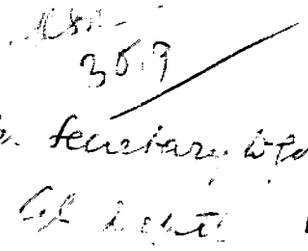
With reference to your letter No. 403 & the 12th June 1915, I am directed to forward herewith G.O. No. 4936 Gen 442-14 & 13-10-15 authorising Mr. William Charles Stephens, Engineer, Carn Brea, Cornwall, to file a Specification of his invention for "Improvements in or connected with Rock Drilling

over.

Machines" and request that the fact may be communicated to the party concerned.

Thanks,





List of enclosures.

Copied by

Examined by

3 Commercial Buildings
Clive Street
Calcutta
22nd October 1915.

I. 26/10

No 409.

DIARY NO. 3603

1915-16
Pen: Mis
442-4
10(a)

To The Secretary to the Government of Mysore
General Department, Bangalore

Sir,

We have the honour to forward under separate cover the Specification of Mr William Charles Stephens of the Climax Rock Drill and Engineering Works Limited, Carn Brea, Cornwall, England, Engineer, of his invention for "Improvements in or connected with Rock Drilling Machines"

We also forward a Money Order for Rs 30 the fee on the Specification and shall feel obliged by the "Certificate" at the foot of the enclosed Govt: order being duly filled in and the document sent to us in due course.

We have the honour to be
Sir
Your most obedient servants
De Penning & De Penning

COUPON. The remitter may write here any communication to the payee.

Rs. 30 a.c.

26/10/15 for open w.c. Stephens No 15 of 1914/15

Debenimg Bel.
Remitter.

To Br V.

26/10/15 Amount remitted

20/11/15

Money & cover sent D
W/L
23/11/15

4 : 6
26-10-15

G.R.S. 26]

SUBJECT.....

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Diary No. of letter replied to 3603

Section Fin : Mis
File No. 442-14
Serial No. 10

General and Revenue Secretariat

( )

, *the* 191 .

No. C 6186 / Rs 30

Date of issue 19-11-15

Signed by Mr. M.S.R. Rao

To

The D.C. Treasury, Bangalore.

Sir,

I am directed to forward herewith a sum of Rs 30/- received from Messrs De Penning & De Penning, Calcutta, being the fees payable under cl (2) Schedule IV of the Mysore Inventions and Designs Regulation XI of 1894, for filing a specification of an invention for "Improvements in or connected with Rock Drilling machines" by Mr. William Charles Stephens

over.

Money sent-
CA 22/11/15

Cash
17/11

ax Rock Drilling and

rs Limited, Carn Brea,

nd, and to request

an acknowledgment.

I have &c,

12/11

for Secretary of State,

C. of Depts. &c.

List of enclosures

Copied by

Examined by

11 b—20,000—14-2 14

MYSORE GOVT, GEN.. & REV.. SECRETARIAT,

No. G 6187 Dated Bangalore, 19 & Nov 1905.

fin 4622-24-11

NOTIFICATION.

(PATENT.)

The following specification of an invention has been filed in accordance with Sections 8, 9, 10 and 11 of Regulation XI of 1894 (The Inventions and Designs Regulations) and is open to inspection at the Mysore Government Secretariat on application to the Secretary to the Government of His Highness the Maharaja of Mysore, General and Revenue Departments, and on payment of a fee of one Rupee.

By Mr. William Charles Stephens, Engineer of The Climax Rock Drill and Engineering Works Limited Carn Brea, Cornwall, England.

"Improvements in or connected with Rock Drilling Machines".

By Order,

MSR

12/11

for Secretary to Govt

Gl Deptt

To

The Compiler, *Mysore Gazette*, for publication.

Del 7/11

C 6188/Inv
Jm 442-14-12

MYSORE GOVT. GEN. & REV. SECRETARIAT,

Dated Bangalore, 19th Nov 1905.

From

The Secretary to the Government of H. H. the Maharaja of Mysore,
General and Revenue Departments.

Messrs de Lenning & de Lenning
3, Commercial Buildings
Clive Street, Calcutta

~~Sir~~, Gentlemen

With reference to your letter dated the 22nd Oct. 905 I am directed to forward copy of a Notification No C 6187 /Jm 442-14-11 dated 19th November 905 issued by this Government in regard to the invention filed by you under Regulation XI of 1894 (The Inventions and Designs Regulations.) and to request that the same may be communicated to the party concerned.

The order granting permission to file specification is herewith returned, with the certificate at foot, duly filled in and signed.

I have the honor to be,
~~Sir~~, Gentlemen
Your most obedient servant,

Dft)

Am
19/11
for Secretary to Govt
Gl Depts

49

G.R.S. 26]

SUBJECT.....

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.....

Diary No. of letter replied to 3603

Section Gen : Mis
File No. 442-14
Serial No. 13

General and Revenue Secretariat.

( )

, *the* 191 .

No. C 6189-91/on

Date of issue 19-11-15

Signed by Mr. M. S. R. Rao

To
(1) The Director of Mines & Geology.
(2) The Supdt, Govt Museum.
(3) The Chief Engineer of Mysore.

Sir,

I am directed to forward herewith for record in your office copy of a specification of an invention for "Improvements in or ~~relating to~~ connected with Rock Drilling machines" by Mr. William Charles Stephens of Carn Brea, Cornwall, and to request the favour of an acknowledgment.

I have &c,
sd/-
12/11
for Secretary to Govt,
Rev. & Ex. Depts.

over.

Dup 17/11

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29/11.

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4316

Rs 30/- Book No. 1060 DIARY No. 64

455

Bangalore District **Treasury** dated 22nd November 1915

Received from The Secretary to Government of Mysore

General Department Bangalore

Rupees Thirty only

Annas ____ and Pies ____ being on account of

Fees payable under Cl (2) Schedule IV of the Mysore

Inventions & Designs Regulations XI of 1894 Received

with letter No: G 6186 dt 19-11-15.

Gen 442-14-10

In-charge of Treasury.

Treasurer

Bangalore District Treasury

DIARY No. 4493

19/4-1915
SECTION
FILE No. 442-14
SERIAL No. 15

Mysore Government Museum.

No. 96 Bangalore, Dated 23rd November 1915.

From

The Superintendent,

Mysore Government Museum,

B a n g a l o re.

To

The Secretary to the Government

of His Highness the Maharaja of Mysore.

General Department.

B a n g a l o r e.

Sir,

I have the honor to acknowledge the receipt of copy of a specification of an invention for 'Improvements in or connected with Rock Drilling Machines' by Mr. William Charles Stephens of Carn Brea, Cornwall, forwarded with your letter No. G6189-91/ G.M.442-14-3, dated 19th November 1915.

I have the honor to be,

S i r,

Your most obedient servant,

Assistant Superintendent.

From The Superintendent
Goat House
Bungalow

To The Secretary to the Govt
of H.H. the Maharaja of Mysore
Ge

Dated

Despatched

Received

General No. G. 6.
No. 1

Enclosure No.

Acknowledging the
receipt of copy of a specifi
cation of an inscentio
"Improvement in or connecte
with Rock drilling machin
by W. W. C. Sly

GPB—500—15-7-15

D.M.G. 12]

BANGALORE, 30th Nov 1915.

No. 1139

DIARY No. 4767
1914-1915
SECTION Gen.
442-14
15

FROM

DR. W. F. SMEETH, M.A., D.Sc., A.R.S.M., etc.,
Director, Department of Mines and Geology,
Mysore State

To

D.M. Narasinga Rao, Esquire, B.A.,B.L.,
Secretary to the Government of His Highness
the Maharaja of Mysore,
General Department.

SIR,

I have the honour to acknowledge the receipt of a copy of a specification of an invention for "Improvement in or connected with Rock Drilling machines" by Mr.Williams Charles Stephens of Carn Brea, Cornwall, forwarded with your letter No.G.6189-91/G.M.442-14-13, dated 19th November 1915 for record in this office.

I have the honour to be,
Sir,
Your most obedient servant,

W. F. Smeeth

Director,
Department of Mines & Geology.

C.N.

DIARY NO. 5727

TELEGRAPHIC ADDRESS : *Statewoks.*

19 -19
SECTION G.-in
FILE NO 442-14
SERIAL NO 17

MYSORE P. W. DEPARTMENT.
CENTRAL OFFICE,
Bangalore 9th December *191* 6.

No. 12394
GEN. & REV. SECT.
12 DEC 1916

From **Rajasabhabhushana**

KARPUR SHRINIVASRAO, ESQ., B.SC., L.C.E.,

Chief Engineer of Mysore,

Bangalore.

To

D.M.Narasinga Row, Esq., B.A., B.L.,
Secretary to Government, General Department,
B a n g a l o r e.

Sir,

I have the honour to acknowledge, with thanks, the receipt of a copy of an invention for "Improvements in or connected with Rock Drilling Machines" by Mr. William Charles Stephens of - - - Carn Brea, Cornwall, received with your letter No.G.6189-91/P.W. 442-14-13 dated the 19th November 1915.

I have the honour to be,

S i r,

Your most obedient servant,

R V Sundaram,
Deputy Chief Engineer of Mysore.

H.R.R.

191

MYSORE P. W. D[illegible]

No.

From

THE CHIEF ENG[illegible] MYSORE

Bangalore

To

Dated Bangalore

Despatched

Enclosure No.

SUBJECT.